Filed: July 2, 2002 Page 2 of 19

## IN THE CLAIMS

Please amend the claims as follows. The following listing of claims replaces all prior versions.

1. (currently amended) A compound of the general formula (I)

 $X(B)_m$ 

(I)

wherein

X is an m-valent unit and

B are identical or different and denote K-R, wherein

K is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein

 $A^1$  is  $(CH_2)_t Y (CH_2)_u$ , wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

(A<sup>2</sup>-A<sup>3</sup>) can be any A<sup>2</sup> and any A<sup>3</sup> in any combination,

 $A^2$  is -NHCO- or -CONH-,

 $A^3$  is  $(CH_2)_r$ ,  $O(CH_2)_r$ , or  $S(CH_2)_r$ , wherein

 $\tau = 1$ 

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-2)Gal, GalNAcα1-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, SiaLe<sup>Λ</sup>, SiaLe<sup>Λ</sup>, HSO<sub>3</sub>Le<sup>Λ</sup>, HSO<sub>3</sub>Le<sup>Λ</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-4GlcNAc, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO<sub>3</sub>GlcAβ1-3Gal, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, HSO<sub>3</sub>(Sia)Le<sup>Λ</sup>, HSO<sub>3</sub>(Sia)Le<sup>Λ</sup>, Le<sup>Λ</sup>, GlcNAcβ1-6(GlcNAcβ1-4GlcNAcβ

Filed: July 2, 2002 Page 3 of 19

3)Gal\u00e41-4Glc, Gal\u00b1Ac\u00e41-4(\u00b1Neu5Ac\u00a2-3)Gal\u00e41-4Glc, mannose-6-phosphate,
Gal\u00b1Ac\u00e41-4Glc\u00b1Ac, oligo-sialic acid, \u00b1N-glycolylneuraminic acid, Gal\u00a14Gal\u00b11-4Glc, or Gal\u00a1-4Gal\u00b11-4Glc\u00b1Ac; and

- m is at least 2, with the proviso that
- (1) in the compound at least one R is not hydrogen,
- (2) there are at least two K that are not a bond, and
- (3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and
- (4) the molar mass of the fragment  $X(K)_m$  is less than 20,000.
- 2. (previously presented) A compound according to claim 1, wherein the molar mass of the fragment X(K)<sub>m</sub> is less than 4,000.
  - 3. (previously presented) A compound according to claim 1, wherein
    - m is an integer from 2 to 4, and
    - is CH<sub>4-m</sub>, NH<sub>3-m</sub>, N<sup>+</sup>H<sub>4-m</sub>, >P- (when m = 3), >P<sup>+</sup>< (when m = 4), >B- (when m = 3), a linear atom group C<sub>2</sub> H<sub>6-m</sub>, >CH(CH<sub>2</sub>)<sub>2</sub>CH<, >C=C<, >N-N<, >N(CH<sub>2</sub>)<sub>2</sub>N< wherein z = 2 6, when m = 4), a carbocyclic atom group C<sub>5</sub>N<sub>3</sub> (when m = 3), C<sub>4</sub>N<sub>2</sub> (when m = 4).
- 4. (previously presented) A compound according to claim 1, wherein there are at least 3 K.
- 5. (previously presented) A compound according to claim 1, wherein at least two R are not hydrogen.

Attorney Docket No. 9286.7

Application Serial No.: 10/019,902

Filed: July 2, 2002 Page 4 of 19

(previously presented) A compound according to claim 1, wherein at least 6. three R are not hydrogen.

- 7-8. (canceled).
- 9. (previously presented) A compound according to claim 1, wherein
- is an integer from 2 to 4, m
- X is CH<sub>4-m</sub>,
- is CH<sub>2</sub>,
- $A^2$ is NHCO.
- A<sup>3</sup> is CH2,
- k is 8,
- is (CH<sub>2</sub>)<sub>3</sub>CONHCH<sub>2</sub>CONHC<sub>6</sub>H<sub>4</sub>-4-CH<sub>2</sub>O- and Sp
- is Neu5Aca2-6GalBI-4GlcNAc. R
- (currently amended) An aggregate of the general formula (II): 10.

$$\{X(B)_m\}_n$$

(II)

wherein  $X(B)_m$  may be identical or different and denote a compound of the general formula (I),

$$X(B)_m$$
 (I)

wherein

- X is an m-valent unit and
- В are identical or different and denote K-R, wherein
  - is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein K
    - $A^{l}$ is (CH<sub>2</sub>)<sub>t</sub>Y(CH<sub>2</sub>)<sub>u</sub>, wherein
    - Y is >C=O, >NH, -O-, -S- or a bond,
    - is an integer from 0 to 6 and t
    - is an integer from 0 to 6,
    - (A<sup>2</sup>-A<sup>3</sup>) can be any A<sup>2</sup> and any A<sup>3</sup> in any combination,

Filed: July 2, 2002 Page 5 of 19

A<sup>2</sup> is –NHCO– or –CONH–,

A<sup>3</sup> is (CH<sub>2</sub>)<sub>r</sub>, O(CH<sub>2</sub>)<sub>r</sub>, or S(CH<sub>2</sub>)<sub>r</sub>, wherein

r = 1,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-2)Gal, Galα1-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, SiaLe<sup>A</sup>, SiaLe<sup>X</sup>, HSO<sub>3</sub>Le<sup>A</sup>, HSO<sub>3</sub>Le<sup>A</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-4GlcNAc, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO<sub>2</sub>GlcAβ1-3Gal, HSO<sub>2</sub>GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, HSO<sub>2</sub>(Sia)Le<sup>X</sup>, HSO<sub>2</sub>(Sia)Le<sup>A</sup>, Le<sup>Y</sup>, GlcNAcβ1-6(GlcNAcβ1-3)Galβ1-4Glc, GalNAcβ1-4(Neu5Acα2-3)Galβ1-4Glc, mannose-6-phosphate, GalNAcβ1-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galα1-4Galβ1-4Glc, or Galα1-4Galβ1-4GlcNAc; and

m is at least 2,

with the proviso that

- (1) in the compound at least one R is not hydrogen,
- (2) there are at least two K that are not a bond, and
- (3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and
- (4) the molar mass of the fragment X(K)<sub>m</sub> is less than 20,000, and n is from 2 to 100,000,

and wherein X(B)<sub>m</sub> are non-covalently bonded.

11. (previously presented) An aggregate according to claim 10 having a leaf-like, linear, cyclic, polycyclic, polyhedral, spherical or dendritic structure.

Attorney Docket No. 9286.7 Application Serial No.: 10/019,902 Filed: July 2, 2002 Page 6 of 19

12. (currently amended) An aggregate according to claim 10 of two or more different compounds comprising a compound of the general formula (I)

 $X(B)_{m}$  (I)

wherein

- X is an m-valent unit and
- B are identical or different and denote K-R, wherein

K is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein

 $A^1$  is  $(CH_2)_t Y (CH_2)_u$ , wherein

Y is >C=0, >NH, -0-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

 $(A^2-A^3)$  can be any  $A^2$  and any  $A^3$  in any combination,

 $A^2$  is -NHCO- or -CONH-,

 $A^3$  is  $(CH_2)_r$ ,  $O(CH_2)_r$ , or  $S(CH_2)_r$ , wherein

r = 1

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-2)Gal, GalNAcα1-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, SiaLe<sup>A</sup>, SiaLe<sup>X</sup>, HSO<sub>3</sub>Le<sup>A</sup>, HSO<sub>3</sub>Le<sup>A</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-4GlcNAc, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO<sub>2</sub>GlcAβ1-3Gal, HSO<sub>2</sub>GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, HSO<sub>2</sub>(Sia)Le<sup>X</sup>, HSO<sub>2</sub>(Sia)Le<sup>A</sup>, Le<sup>Y</sup>, GlcNAcβ1-6(GlcNAcβ1-3)Galβ1-4Glc, GalNAcβ1-4(Neu5Acα2-3)Galβ1-4Glc, mannose-6-phosphate, GalNAcβ1-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galα1-4Galβ1-4Glc, or Galα1-4Galβ1-4GlcNAc; and

Attorney Docket No. 9286.7 Application Serial No.: 10/019,902 Filed: July 2, 2002 Page 7 of 19

m is at least 2, with the proviso that

- (1) in the compound at least one R is not hydrogen,
- (2) there are at least two K that are not a bond, and
- (3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and
- (4) the molar mass of the fragment X(K)<sub>m</sub> is less than 20,000.
  - 13. (canceled)
- 14. (previously presented) A method according to claim 27, further comprising adding a concentrated salt solution, changing the pH or the temperature, or adding organic solvents.
- 15. (currently amended) A method for changing the structure of an aggregate of the general formula (II)

$$\{X(B)_m\}_n \tag{II}$$

wherein X(B)<sub>m</sub> may be identical or different and denote a compound of the general formula (I),

$$X(B)_m$$
 (1)

wherein

X is an m-valent unit and

B are identical or different and denote K-R, wherein

K is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein

A<sup>1</sup> is (CH<sub>2</sub>)<sub>1</sub>Y(CH<sub>2</sub>)<sub>u</sub>, wherein

Y is >C=0, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

(A<sup>2</sup>-A<sup>3</sup>) can be any A<sup>2</sup> and any A<sup>3</sup> in any combination,

Attorney Docket No. 9286.7

Application Serial No.: 10/019,902

Filed: July 2, 2002 Page 8 of 19

A<sup>2</sup> is -NHCO- or -CONH-.

A<sup>3</sup> is (CH<sub>2</sub>)<sub>r</sub>, O(CH<sub>2</sub>)<sub>r</sub>, or S(CH<sub>2</sub>)<sub>r</sub>, wherein

r = 1,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-2)Gal, Galα1-3(Fucα1-2)Gal, Galα1-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, SiaLe<sup>X</sup>, SiaLe<sup>X</sup>, HSO<sub>3</sub>Le<sup>A</sup>, HSO<sub>3</sub>Le<sup>X</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-4GlcNAc, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO<sub>3</sub>GlcAβ1-3Gal, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, HSO<sub>3</sub>(Sia)Le<sup>X</sup>, HSO<sub>3</sub>(Sia)Le<sup>A</sup>, Le<sup>Y</sup>, GlcNAcβ1-6(GlcNAcβ1-3)Galβ1-4Glc, GalNAcβ1-4(Neu5Acα2-3)Galβ1-4Glc, mannose-6-phosphate, GalNAcβ1-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galα1-4Galβ1-4Glc, or Galα1-4Galβ1-4GlcNAc; and

m is at least 2,

## with the proviso that

- (1) in the compound at least one R is not hydrogen,
- (2) there are at least two K that are not a bond, and
- (3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and
- (4) the molar mass of the fragment X(K)<sub>m</sub> is less than 20,000, and
- n is from 2 to 100,000, and wherein  $X(B)_m$  are non-covalently bonded,

further comprising adding a concentrated salt solution, changing the temperature or the pH and/or adding urea, trifluoroethanol or peptides.

Filed: July 2, 2002 Page 9 of 19

16. (previously presented) A method according to claim 27 further comprising increasing the specific physiological activities of molecules by incorporating a radical R into a compound of the general formula (I).

## 17. (canceled)

18. (currently amended) A method of treating diseases arising from inflammation, viral and bacterial infections, influenza viruses, selectin-mediated inflammatory processes, tumour metastases, or in the neutralisation of antibodies in autoimmune disorders and transplants; said method comprising administering a compound of the general formula (I)

$$X(B)_m$$
 (I)

wherein

X is an m-valent unit and

B are identical or different and denote K-R, wherein

K is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein

A<sup>1</sup> is (CH<sub>2</sub>)<sub>t</sub>Y(CH<sub>2</sub>)<sub>u</sub>, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

(A<sup>2</sup>-A<sup>3</sup>) can be any A<sup>2</sup> and any A<sup>3</sup> in any combination,

A<sup>2</sup> is -NHCO-or -CONH-,

 $A^3$  is  $(CH_2)_r$ ,  $O(CH_2)_r$ , or  $S(CH_2)_r$ , wherein

r = 1

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-2)Gal, GalNAcα1-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, SiaLe<sup>A</sup>, SiaLe<sup>A</sup>, HSO<sub>3</sub>Le<sup>A</sup>, HSO<sub>3</sub>Le<sup>A</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-

Attorney Docket No. 9286.7

Application Serial No.: 10/019,902

Filed: July 2, 2002 Page 10 of 19

4GlcNAc, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO<sub>3</sub>GlcAβ1-3Gal, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, HSO<sub>3</sub>(Sia)Le<sup>X</sup>, HSO<sub>3</sub>(Sia)Le<sup>A</sup>, Le<sup>Y</sup>, GlcNAcβ1-6(GlcNAcβ1-3)Galβ1-4Glc, GalNAcβ1-4(NeuSAcα2-3)Galβ1-4Glc, mannose-6-phosphate, GalNAcβ1-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galα1-4Galβ1-4Glc, or Galα1-4Galβ1-4GlcNAc; and

m is at least 2,

with the proviso that

- (1) in the compound at least one R is not hydrogen,
- (2) there are at least two K that are not a bond, and
- (3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and
- (4) the molar mass of the fragment X(K)<sub>m</sub> is less than 20,000; or administering into an aggregate of the general formula (II)

$$\{X(B)_m\}_n \tag{II}$$

wherein

X(B)<sub>m</sub> may be identical or different and denote a compound of the general formula (I), and n is from 2 to 100,000, and wherein X(B)<sub>m</sub> are non-covalently bonded.

- 19. (canceled)
- 20. (previously presented) A method according to claim 18 further comprising preparing functionalized molecular surfaces.

21-22. (canceled).

Filed: July 2, 2002 Page 11 of 19

23. (currently amended) A compound of the general formula (I),

 $X(B)_m$  (I)

wherein

X is an m-valent unit and

B are identical or different and denote K-R, wherein

K is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein

 $A^1$  is  $(CH_2)_t Y (CH_2)_u$ , wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

 $(A^2-A^3)$  can be any  $A^2$  and any  $A^3$  in any combination,

 $A^2$  is -NHCO- or -CONH-,

 $A^3$  is  $(CH_2)_r$ ,  $O(CH_2)_r$ , or  $S(CH_2)_r$ , wherein

r = 1,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-2)Gal, GalαΛ-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, SiaLe<sup>A</sup>, SiaLe<sup>X</sup>, HSO<sub>3</sub>Le<sup>A</sup>, HSO<sub>3</sub>Le<sup>A</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-4GlcNAc, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO<sub>2</sub>GlcAβ1-3Gal, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, HSO<sub>2</sub>(Sia)Le<sup>X</sup>, HSO<sub>2</sub>(Sia)Le<sup>A</sup>, Le<sup>Y</sup>, GlcNAcβ1-6(GlcNAcβ1-3)Galβ1-4Glc, GalNAcβ1-4(Neu5Acα2-3)Galβ1-4Glc, mannose-6-phosphate, GalNAcβ1-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galα1-4Galβ1-4Glc, or Galα1-4Galβ1-4GlcNAc; and

m is at least 2,

with the proviso that

MAY. 23. 2006 5:30PM

Attorney Docket No. 9286.7 Application Serial No.: 10/019,902

Filed: July 2, 2002 Page 12 of 19

- (1) X, B and m are so selected that an intermolecular association of the K in liquid phase is possible, especially under aqueous conditions, by the formation of hydrogen bonds, with formation of aggregates, and
- (2) the molar mass of the fragment  $X(K)_m$  is less than 20,000, especially less than 4000.

24-26. (canceled)

27. (currently amended) A method of preparing an aggregate comprising: preparing a compound of the general formula (II)

$$\{X(B)_m\}_n$$

(II)

wherein

X(B)<sub>m</sub> may be identical or different and denote a compound of the general formula (I),

$$X(B)_m$$

**(I)** 

wherein

- X is an m-valent unit and
- B are identical or different and denote K-R, wherein

K is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein

 $A^1$  is  $(CH_2)_t Y (CH_2)_u$ , wherein

Y is >C=0, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

(A<sup>2</sup>-A<sup>3</sup>) can be any A<sup>2</sup> and any A<sup>3</sup> in any combination,

 $A^2$  is -NHCO-or -CONH-,

A<sup>3</sup> is (CH<sub>2</sub>)<sub>r</sub>, O(CH<sub>2</sub>)<sub>r</sub>, or S(CH<sub>2</sub>)<sub>r</sub>, wherein

r = 1

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sially lactose, sially lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-

Filed: July 2, 2002 Page 13 of 19

2)Gal, GalNAcα1-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, SiaLe<sup>A</sup>, SiaLe<sup>X</sup>, HSO<sub>3</sub>Le<sup>A</sup>, HSO<sub>3</sub>Le<sup>A</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-4GlcNAc, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO<sub>2</sub>GlcAβ1-3Gal, HSO<sub>3</sub>GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, HSO<sub>2</sub>(Sia)Le<sup>X</sup>, HSO<sub>3</sub>(Sia)Le<sup>A</sup>, Le<sup>Y</sup>, GlcNAcβ1-6(GlcNAcβ1-3)Galβ1-4Glc, GalNAcβ1-4(Neu5Acα2-3)Galβ1-4Glc, mannose-6-phosphate, GalNAcβ1-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galα1-4Galβ1-4Glc, or Galα1-4Galβ1-4GlcNAc; and

m is at least 2,

with the proviso that

- (1) in the compound at least one R is not hydrogen,
- (2) there are at least two K that are not a bond, and
- (3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and
- (4) the molar mass of the fragment X(K)<sub>m</sub> is less than 20,000, and
- n is from 2 to 100,000,

and wherein X(B)<sub>m</sub> are non-covalently bonded.

28. (currently amended) A method of preparing a therapeutic drug comprising: preparing the compound of the general formula (I)

$$X(B)_{m}$$

(I)

wherein

X is an m-valent unit and

B are identical or different and denote K-R, wherein

K is a bond or is  $A^1-(A^2-A^3)_k$ -sp, wherein

 $A^1$  is  $(CH_2)_t Y (CH_2)_u$ , wherein

Y is >C=O, >NH, -O-, -S- or a bond,

Attorney Docket No. 9286.7 Application Serial No.: 10/019,902 Filed: July 2, 2002 Page 14 of 19

> t is an integer from 0 to 6 and

u is an integer from 0 to 6.

(A<sup>2</sup>-A<sup>3</sup>) can be any A<sup>2</sup> and any A<sup>3</sup> in any combination,

 $A^2$ is -NHCO- or -CONH-.

 $A^3$ is (CH<sub>2</sub>)<sub>r</sub>, O(CH<sub>2</sub>)<sub>r</sub>, or S(CH<sub>2</sub>)<sub>r</sub>, wherein

is a divalent spacer or a bond, and \$p

k is an integer from 5 to 100, and

R is hydrogen, or a ligand suitable for specific bonding to a receptor sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal, Galα1-3(Fucα1-2)Gal, GalNAca1-3(Fuca1-2)Gal, Neu5Aca2-6GalNAc, SiaLeA, SiaLeA, HSO3LeA, HSO<sub>3</sub>Le<sup>X</sup>, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1-4GlcNAc, HSO3GlcAβ1-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, sialic acid benzyl glycoside, HSO, GlcAβ1-3Gal, HSO, GlcAβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAca, GalNAca1-3(Fuca1-2)Galβ1-4GlcNAc, Galα1-3(Fuca1-2)GalB1-4GlcNAc, HSO<sub>3</sub>(Sia)Le<sup>X</sup>, HSO<sub>3</sub>(Sia)Le<sup>A</sup>, Le<sup>Y</sup>, GlcNAcB1-6(GlcNAcB1-3)GalB1-4Glc, GalNAcB1-4(Neu5Aca2-3)GalB1-4Glc, mannose-6-phosphate, GalNAc\u00e31-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galal-4Gal\u00e31-4Glc, or Gala1-4GalB1-4GlcNAc; and

is at least 2. m

with the proviso that

- (1) in the compound at least one R is not hydrogen,
- (2) there are at least two K that are not a bond, and
- (3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and
- the molar mass of the fragment X(K)<sub>m</sub> is less than 20,000; or (4) preparing the compound of the general formula (II):

(II)

Attorney Docket No. 9286.7 Application Serial No.: 10/019,902 Filed: July 2, 2002 Page 15 of 19

wherein

 $X(B)_m$  may be identical or different and denote a compound of the general formula (I), and n is from 2 to 100,000, and wherein  $X(B)_m$  are non-covalently bonded; and a pharmaceutically acceptable carrier.

29. (canceled)